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FOREST STATISTICS FOR WESTERN AND CENTRAL TENNESSEE

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A REPORT OF THE SOUTHERN FOREST SURVEY

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THE SOUTHERN FOREST SURVEY

The Southern Forest Survey, an activity of the Southern Forest Experiment Station, covers the seven States of the Station's territory--Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas. This Survey is a part of the nation-wide Forest Survey authorized by the McSweeney-McNary Forest Research Act of 1928. Its five-fold purpose is (1) to take inventory of the supply of standing timber and other forest products; (2) to ascertain the rate at which this supply is being increased through growth; (3) to determine the rate at which this supply is being diminished through industrial and local use, and by fire, insects, disease, and other agencies; (4) to estimate the present requirements and the probable future trend in the requirements for timber and other forest products; and (5) to correlate these findings with existing and anticipated economic conditions, in order that policies may be formulated for the effective use of lands suitable for forest production.

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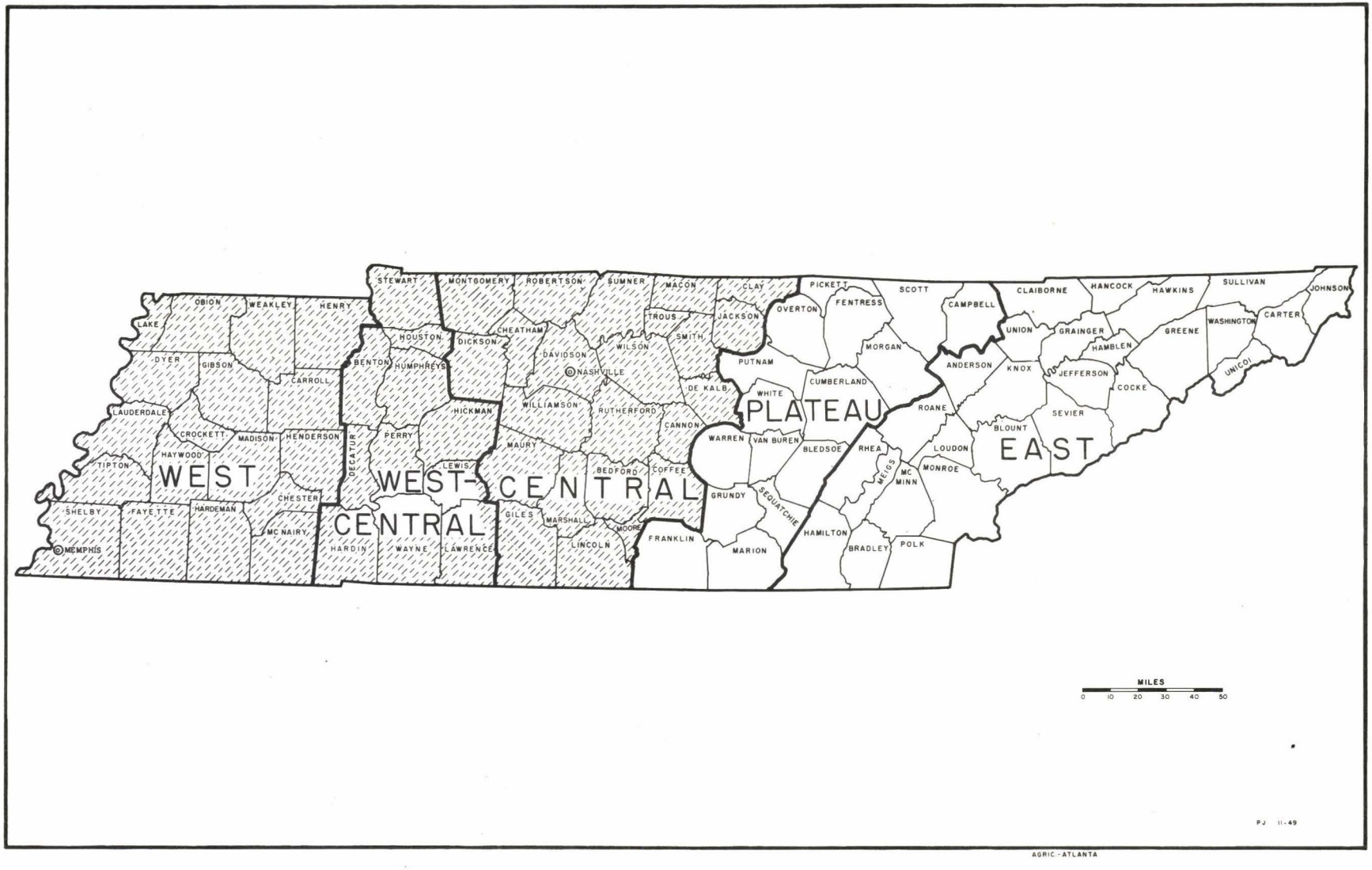


Forest regions in Tennessee. (Regions included in this report are the shaded portions of the map.)

FOREST STATISTICS FOR WESTERN AND CENTRAL TENNESSEE

This publication summarizes the data on forest acreage and timber volume collected by the Southern Forest Survey in western and central Tennessee (figure 1). The survey was made between July 1948 and April 1949. The eastern portions of Tennessee are scheduled to be surveyed during 1950.

Highlights

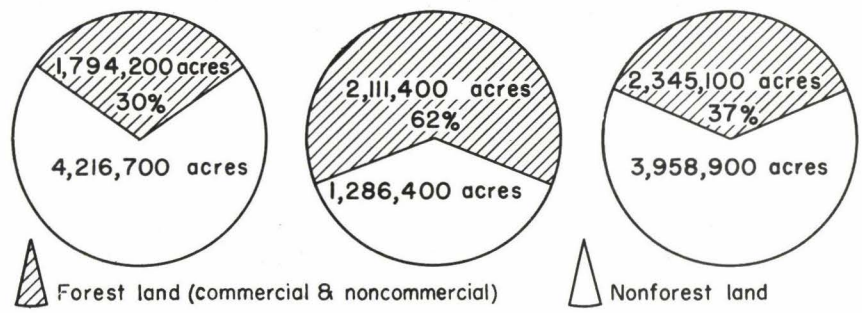
Extending from the Mississippi River to the Cumberland Plateau, western and central Tennessee embraces 15.7 million acres, of which 40 percent is forest land. Although the area displays considerable physiographic variation, it is characterized throughout by an agricultural economy. In the west Tennessee region, cotton is the main cash crop. Memphis, the economic focal point of the region, is the principal market for the cotton crop and also a center in the manufacture and marketing of hardwood from the forests. East of the Tennessee River, in the west-central and central regions, higher elevations prevail. Here tobacco, livestock, and dairying are the major income sources for the predominantly rural population. Nashville, the State capital, forms the economic and cultural hub of this upland area.

West Tennessee, geologically a part of the Gulf Coastal Plain, is lightly forested. The plain rises from an elevation of 300 to 400 feet at the Mississippi River to approximately 700 feet at its eastern margin overlooking the Tennessee River. Sawlog volume in the region averages 1,817 board feet per acre in the hardwood forests and 893 board feet per acre in the softwood forests (mainly shortleaf pine). Over 90 percent of the 802.7 million cubic feet of total growing stock is composed of hardwoods. This region contains almost three times as much sawlog volume (371.4 million board feet) in trees over 25 inches d.b.h. as west-central and central Tennessee combined. This is due primarily to the concentration of bottomland-hardwood forests, where the trees grow rapidly and to large size; and where commercial cutting, because of higher standards of merchantability, is lighter than in the other types of forest.

FOREST ACREAGE

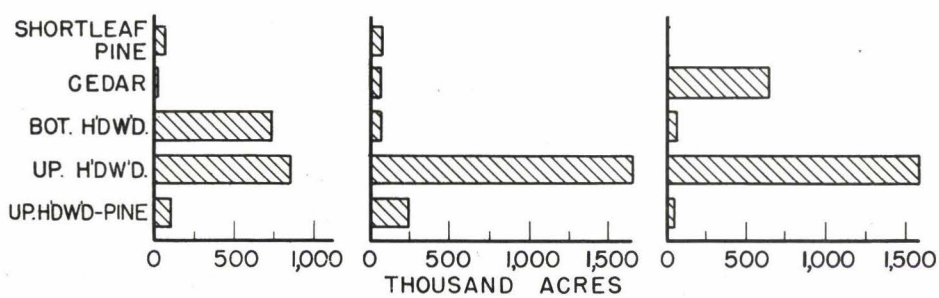
FOREST LAND

West and central Tennessee are lightly forested. The west-central region, however, is nearly two-thirds forest.



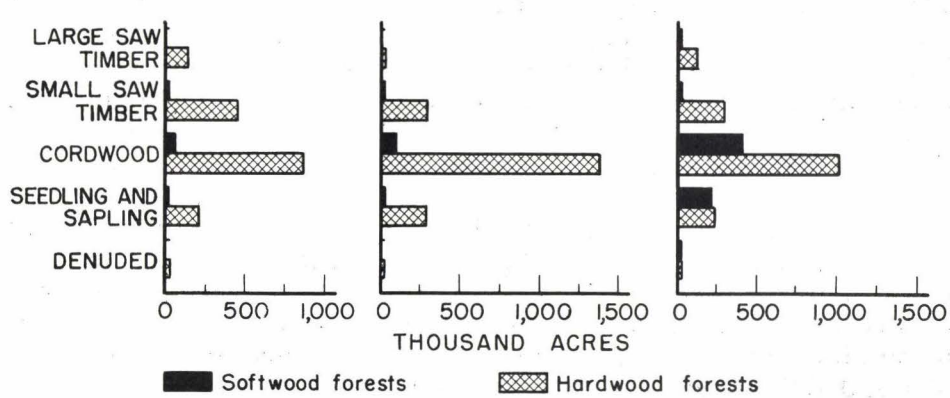
FOREST TYPE

Upland hardwoods predominate in all regions. In addition, there are large acreages of bottomland hardwoods in the west, and cedar in the central region.



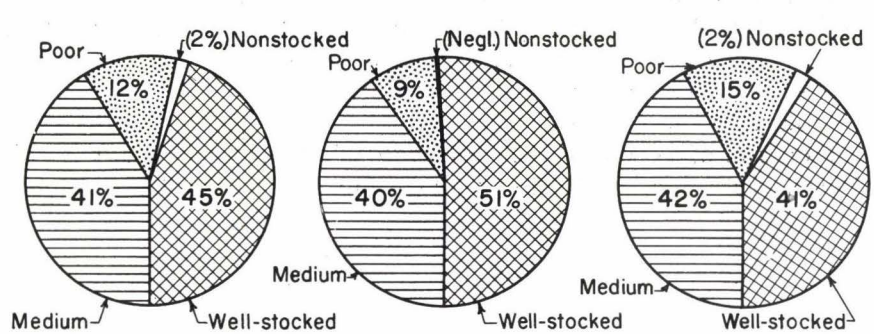
STAND SIZE

Cordwood stands predominate in all regions, both in the hardwood and in softwood forest types.



FOREST STOCKING

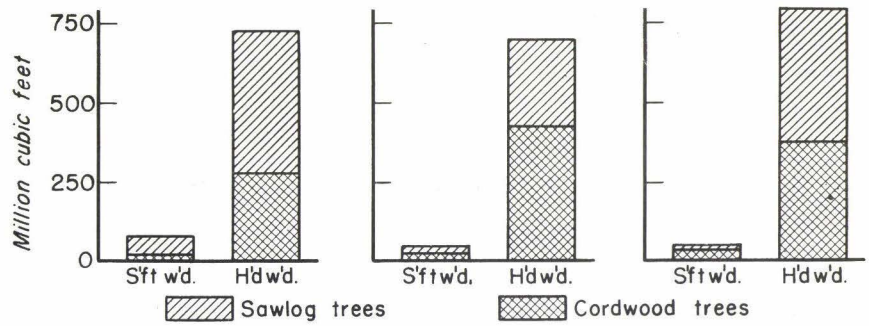
Considering all well-formed trees, including established seedlings, about half of the forest land is well stocked. Best stocking is found in the west-central region.



TIMBER VOLUME

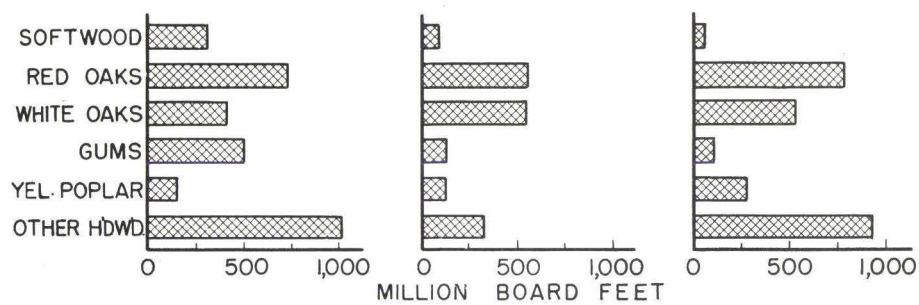
TOTAL GROWING STOCK

Hardwoods make up approximately 90 percent of the total growing stock in all regions. Most of the total growing stock is in sawlog trees.



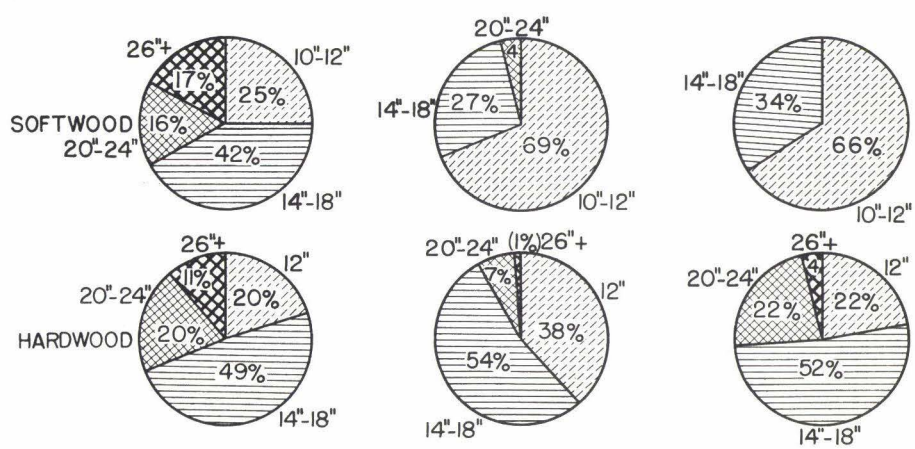
SAWLOG VOLUME BY SPECIES GROUP

In terms of saw timber, oaks constitute the largest species group. Red oaks predominate.



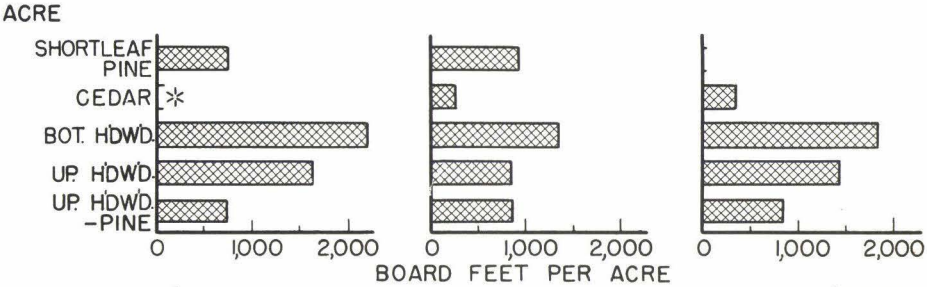
SAWLOG VOLUME BY TREE DIAMETER

Hardwood sawlog volume is concentrated in the 14"–18" d.b.h. group in all regions. Softwood distrbution varies.



SAWLOG VOLUME PER ACRE BY FOREST TYPE

All forest types are rather poorly stocked with sawlog trees. The average in west Tennessee is 1,774 bd. ft. per acre; in west-central, 846 bd.ft.; and in central, 1,145 bd. ft.



* Sample too small to be reliable.

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The west-central region, comprising 11 counties east of the Tennessee River, is the most heavily forested of the three regions. Sixty-two percent of the almost 3.5 million acres in the region is forested, largely with upland hardwoods. The poor quality of the soil for agriculture will undoubtedly continue to favor the expansion of forest acreage in this region. Sawlog volume averages only 862 board feet per acre in the hardwood types and 625 board feet per acre in the softwood types.

The central region, extending east to the Cumberland Plateau, is an area of fertile limestone soils and some poorer shales and sandstones. It is the largest of the three regions, containing over 6.3 million acres. Of this, 37 percent is forest land. Although the forest is composed mainly of upland hardwoods, it also includes a vast acreage of cedar stands, embracing almost 30 percent of the forest area. Sawlog volume in the region averages 1,444 board feet per acre for the hardwood types and 358 board feet per acre for the softwood types (primarily cedar). The total growing stock amounts to 837.2 million cubic feet, of which 6 percent is softwoods.

Accompanying the low per-acre timber volumes in all regions is a low basal area[1/] of growing stock, which averages about 40 square feet per acre in the extensive upland hardwood types. This is roughly half of what the basal area would be under full stocking. Only about half the forest in all three regions is well stocked, considering all well-formed trees from seedlings to saw timber. Over 70 percent of the sawlog volume in all regions is in grade 3 logs or trees--knotty material, suited mainly to low-grade uses.

Accuracy of the Data

Data were obtained from a sampling of aerial photographs and from on-the-ground measurements on quarter-acre sample plots (two at each location) located every 3 miles on lines 3 miles apart throughout western and central Tennessee. Statistical analysis of the data for the three Survey regions indicates a sampling error of 1 percent for the estimate of total forest area, 4 percent for total cubic-foot volume, and 5 percent for total board-foot volume. As these totals are broken down by region, county, forest type, species, and other subdivisions, the possibility of error increases and is greatest for the smallest items.

1/ Definitions of terms used in this report will be found in the appendix.

The maximum sampling error to which the estimates are liable, on a probability of two chances out of three, is approximately as follows:

Maximum sampling error in forest area		Maximum sampling error in cubic-foot volume		Maximum sampling error in board-foot volume	
Thousand acres	Percent error	Million cu. ft.	Percent error	Million bd. ft.	Percent error
2,000	1	800	4	3,000	5
1,000	1	400	6	1,500	7
500	2	100	12	500	13
50	6	10	37	50	41

The estimates of sampling error do not include errors in volume tables, cull allowances, or other such measurements. Methods of estimating errors of this type have not been developed.

Table 1.--Forest and nonforest land area by Survey region, 1948-49

Land use	West	West-central	Central
	Thousand acres		
Forest:[1/]			
Commercial	1,787.7	2,107.1	2,344.8
Reserved-commercial	6.5	4.3	.3
Total	1,794.2	2,111.4	2,345.1
Nonforest	4,216.7	1,286.4	3,958.9
All land	6,010.9	3,397.8	6,304.0

1/ No forest land was found that was incapable of producing commercial timber.

Table 2.--Land area and commercial forest by county, 1948-49[1/]

County	All land	Commercial forest	
	Thousand acres	Thousand acres	Percent
Bedford	308.5	77.7	25.2
Benton	275.2	146.0	53.1
Cannon	173.4	78.5	45.3
Carroll	381.4	133.4	35.0
Cheatham	195.2	126.4	64.8
Chester	182.4	67.8	37.2
Clay	169.0	78.6	46.5
Coffee	278.4	131.7	47.3
Crockett	172.2	26.8	15.6
Davidson	340.5	126.3	37.1
Decatur	221.4	125.5	56.7
De Kalb	202.9	100.4	49.5
Dickson	311.0	141.2	45.4
Dyer	337.3	105.3	31.2
Fayette	450.5	117.5	26.1
Gibson	388.5	66.4	17.1
Giles	396.1	120.4	30.4
Hardeman	419.2	178.4	42.6
Hardin	380.8	221.9	58.3
Haywood	332.2	89.3	26.9
Henderson	329.6	119.2	36.2
Henry	383.4	130.0	33.9
Hickman	392.3	249.3	63.5
Houston	132.5	86.3	65.1
Humphreys	355.2	223.1	62.8
Jackson	209.3	87.5	41.8
Lake	105.0	25.1	23.9
Lauderdale	311.7	108.5	34.8
Lawrence	405.8	174.0	42.9
Lewis	182.4	137.4	75.3
Lincoln	371.8	139.8	37.6
McNairy	364.2	139.0	38.2
Macon	194.6	79.4	40.8
Madison	359.0	113.4	31.6
Marshall	241.3	78.2	32.4
Maury	392.9	117.5	29.9

Table 2.--Land area and commercial forest by county, 1948-49[1/] (continued)

County	All land	Commercial forest	
	Thousand acres	Thousand acres	Percent
Montgomery	347.5	125.1	36.0
Moore	78.1	30.2	38.7
Obion	352.0	94.0	26.7
Perry	268.2	192.2	71.7
Robertson	303.4	76.8	25.3
Rutherford	403.2	123.9	30.7
Shelby	480.6	113.6	23.6
Smith	208.0	88.4	42.5
Stewart	309.8	208.7	67.4
Sumner	353.3	124.4	35.2
Tipton	293.1	73.4	25.0
Trousdale	74.2	24.7	33.3
Wayne	474.2	342.7	72.3
Weakley	368.6	86.6	23.5
Williamson	380.2	134.5	35.4
Wilson	371.2	133.2	35.9

1/ County data on sawlog and total growing stock, suitable for combining into county groups, are available as a supplement to this release.

Table 3.--Commercial forest land by stand size and forest type, by Survey region, 1948-49

Forest type	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Denuded
	Thousand acres					
WEST						
Softwood types:						
Shortleaf pine	67.6	...	10.6	52.4	4.6	...
Cedar	15.8	...	3.0	9.5	3.3	...
Total	83.4	...	13.6	61.9	7.9	...
Hardwood types:						
Bottomland hardwood	733.4	76.1	229.0	365.4	57.3	5.6
Upland hardwood	867.0	57.5	223.9	428.5	134.8	22.3
Upland hardwood-pine	103.9	6.2	2.1	78.6	13.7	3.3
Total	1,704.3	139.8	455.0	872.5	205.8	31.2
All types	1,787.7	139.8	468.6	934.4	213.7	31.2
WEST-CENTRAL						
Softwood types:						
Shortleaf pine	74.8	...	20.2	51.9	2.7	...
Cedar	64.6	...	...	44.2	20.4	...
Total	139.4	...	20.2	96.1	23.1	...
Hardwood types:						
Bottomland hardwood	66.8	2.5	20.7	37.8	5.8	...
Upland hardwood	1,651.8	19.6	231.4	1,146.2	251.9	2.7
Upland hardwood-pine	249.1	2.5	41.4	180.7	24.5	...
Total	1,967.7	24.6	293.5	1,364.7	282.2	2.7
All types	2,107.1	24.6	313.7	1,460.8	305.3	2.7
CENTRAL						
Softwood types:						
Shortleaf pine	...	...	...	...	...	...
Cedar	646.0	2.6	8.1	407.1	213.0	15.2
Total	646.0	2.6	8.1	407.1	213.0	15.2
Hardwood types:						
Bottomland hardwood	71.9	10.5	15.1	35.0	11.3	...
Upland hardwood	1,591.0	118.2	279.4	964.2	206.4	22.8
Upland hardwood-pine	35.9	...	2.7	20.5	12.7	...
Total	1,698.8	128.7	297.2	1,019.7	230.4	22.8
All types	2,344.8	131.3	305.3	1,426.8	443.4	38.0

Table 4.--Commercial forest land by degree of tree stocking and forest type, by Survey region, 1948-49

Forest type	All stocking	Well stocked	Medium stocked	Poorly stocked	Non-stocked
			Thousand acres		
			WEST		
Softwood types:					
Shortleaf pine	67.6	26.0	37.4	4.2	...
Cedar	15.8	6.3	3.0	6.5	...
Total	83.4	32.3	40.4	10.7	...
Hardwood types:					
Bottomland hardwood	733.4	313.3	316.7	97.8	5.6
Upland hardwood	867.0	431.8	325.0	87.9	22.3
Upland hardwood-pine	103.9	22.3	59.9	18.4	3.3
Total	1,704.3	767.4	701.6	204.1	31.2
All types	1,787.7	799.7	742.0	214.8	31.2
			WEST-CENTRAL		
Softwood types:					
Shortleaf pine	74.8	63.3	11.5	...	...
Cedar	64.6	8.1	50.9	5.6	...
Total	139.4	71.4	62.4	5.6	...
Hardwood types:					
Bottomland hardwood	66.8	30.6	30.5	5.7	...
Upland hardwood	1,651.8	800.1	677.8	171.2	2.7
Upland hardwood-pine	249.1	181.7	61.7	5.7	...
Total	1,967.7	1,012.4	770.0	182.6	2.7
All types	2,107.1	1,083.8	832.4	188.2	2.7
			CENTRAL		
Softwood types:					
Cedar	646.0	199.0	298.3	133.5	15.2
Hardwood types:					
Bottomland hardwood	71.9	41.5	26.3	4.1	...
Upland hardwood	1,591.0	700.5	647.0	220.7	22.8
Upland hardwood-pine	35.9	18.2	15.4	2.3	...
Total	1,698.8	760.2	688.7	227.1	22.8
All types	2,344.8	959.2	987.0	360.6	38.0

Table 5.--Area of saw-timber stands by stand-quality and forest type, by Survey region, 1948-49

Forest type	All qualities	Fair or better	Poor
	Thousand acres		
	WEST		
Softwood types:			
Shortleaf pine	10.6	6.4	4.2
Cedar	3.0	3.0	...
Total	13.6	9.4	4.2
Hardwood types:			
Bottomland hardwood	305.1	130.1	175.0
Upland hardwood	281.4	106.8	174.6
Upland hardwood-pine	8.3	4.1	4.2
Total	594.8	241.0	353.8
All types	608.4	250.4	358.0
	WEST-CENTRAL		
Softwood types:			
Shortleaf pine	20.2	5.0	15.2
Hardwood types:			
Bottomland hardwood	23.2	2.5	20.7
Upland hardwood	251.0	46.0	205.0
Upland hardwood-pine	43.9	15.7	28.2
Total	318.1	64.2	253.9
All types	338.3	69.2	269.1
	CENTRAL		
Softwood types:			
Cedar	10.7	2.6	8.1
Hardwood types:			
Bottomland hardwood	25.6	6.4	19.2
Upland hardwood	397.6	147.5	250.1
Upland hardwood-pine	2.7	...	2.7
Total	425.9	153.9	272.0
All types	436.6	156.5	280.1

Table 6.--Basal area per acre of growing stock[1] and cull trees by forest-type group and Survey region, 1948-49

Forest type	West	West-central	Central
	Square feet		
Softwood types:			
Growing stock	39.2	38.2	26.8
Cull trees	7.6	8.0	11.5
Total	46.8	46.2	38.3
Bottomland hardwood:			
Growing stock	47.9	51.9	52.2
Cull trees	29.7	21.5	25.5
Total	77.6	73.4	77.7
Upland hardwood:[2]			
Growing stock	37.5	38.0	41.7
Cull trees	15.3	10.7	14.6
Total	52.8	48.7	56.3
All growing stock and cull trees	62.7	49.3	52.0

1/ Includes sound, well-formed 2- and 4-inch trees.
2/ Includes upland hardwood-pine.

Table 7.--Total volume by class of timber and species, by Survey region, 1948-49

Species	All timber[1]	Growing stock				Tops and limbs	Cull trees
		All trees	Sawlog trees		Cordwood trees		
			Sawlog portions	Tops			
	Million cubic feet						
WEST							
Softwood:							
Southern pines	22.8	22.7	9.5	1.5	11.7	...	0.1
Cedar	7.7	6.7	3.6	.7	2.4	...	1.0
Cypress	59.4	48.9	39.5	5.1	4.3	...	10.5
Total	89.9	78.3	52.6	7.3	18.4	...	11.6
Hardwood:							
Red oaks	288.1	169.9	117.3	...	52.6	71.8	46.4
White oaks	172.2	102.8	63.6	...	39.2	42.2	27.2
Hickories	114.0	65.7	40.0	...	25.7	23.6	24.7
Yellow-poplar	53.3	37.6	24.4	...	13.2	10.7	5.0
Sweetgum	154.6	101.9	60.4	...	41.5	30.7	22.0
Black and tupelo gum	76.4	34.1	20.0	...	14.1	12.5	29.8
Other hardwood	519.6	212.4	121.7	...	90.7	71.9	235.3
Total	1,378.2	724.4	447.4	...	277.0	263.4	390.4
All species	1,468.1	802.7	500.0	7.3	295.4	263.4	402.0
WEST-CENTRAL							
Softwood:							
Southern pines	33.4	33.1	14.9	2.4	15.8	...	.3
Cedar	7.7	7.0	1.6	.3	5.1	...	.7
Cypress	.5	.5	.3	.1	.1	...	...
Total	41.6	40.6	16.8	2.8	21.0	...	1.0
Hardwood:							
Red oaks	312.3	210.9	89.6	...	121.3	46.5	54.9
White oaks	352.7	244.8	89.6	...	155.2	49.0	58.9
Hickories	141.7	100.9	31.3	...	69.6	15.9	24.9
Yellow-poplar	47.4	33.1	19.8	...	13.3	8.1	6.2
Sweetgum	40.6	29.2	12.8	...	16.4	6.3	5.1
Black and tupelo gum	33.7	16.9	8.2	...	8.7	4.4	12.4
Other hardwood	140.7	59.1	21.6	...	37.5	12.8	68.8
Total	1,069.1	694.9	272.9	...	422.0	143.0	231.2
All species	1,110.7	735.5	289.7	2.8	443.0	143.0	232.2

Table 7.--Total volume by class of timber and species, by Survey Region, 1948-49 (continued)

Species	All timber 1/	Growing stock				Tops and limbs	Cull trees
		All trees	Sawlog trees		Cordwood trees		
			Sawlog portions	Tops			
	Million cubic feet						
CENTRAL							
Softwood:							
Southern pines	0.1	0.1	...	...	0.1	...	...
Cedar	61.6	47.3	11.1	2.0	34.2	...	14.3
Total	61.7	47.4	11.1	2.0	34.3	...	14.3
Hardwood:							
Red oaks	297.4	184.1	120.7	...	63.4	73.0	40.3
White oaks	241.7	150.6	83.0	...	67.6	52.1	39.0
Hickories	181.3	132.0	50.6	...	81.4	27.5	21.8
Yellow-poplar	101.0	69.7	43.7	...	26.0	20.0	11.3
Sweetgum	29.0	21.8	10.2	...	11.6	4.6	2.6
Black and tupelo gum	28.7	17.6	6.9	...	10.7	4.0	7.1
Other hardwood	504.6	214.0	96.4	...	117.6	60.6	230.0
Total	1,383.7	789.8	411.5	...	378.3	241.8	352.1
All species	1,445.4	837.2	422.6	2.0	412.6	241.8	366.4

1/ Sound volume in dead trees considered salvagable is not included. This volume is as follows:

Region	Chestnut	Other species
	(Million cubic feet)	
West	...	3.2
West-central	7.0	3.2
Central	8.1	5.7

Table 8.--Total growing stock by species and stand size, by Survey region, 1948-49

Species	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Denuded
	Million cubic feet					
WEST						
Softwood:						
Southern pines	22.7	3.1	6.6	12.7	0.3	...
Cedar	6.7	.2	2.9	3.5	.1	...
Cypress	48.9	25.6	19.2	3.9	.2	...
Total	78.3	28.9	28.7	20.1	.6	...
Hardwood:						
Red oaks	169.9	34.8	67.2	64.6	2.6	.7
White oaks	102.8	15.8	45.8	39.1	2.1	...
Hickories	65.7	7.3	28.3	29.0	1.0	.1
Yellow-poplar	37.6	2.2	28.5	6.8	.1	...
Sweetgum	101.9	14.3	50.7	35.6	1.1	.2
Black and tupelo gum	34.1	3.5	21.3	9.1	.2	...
Other hardwoods	212.4	31.5	104.4	72.9	3.1	.5
Total	724.4	109.4	346.2	257.1	10.2	1.5
All species	802.7	138.3	374.9	277.2	10.8	1.5
WEST-CENTRAL						
Softwood:						
Southern pines	33.1	.2	14.6	17.7	.6	...
Cedar	7.0	.5	.3	5.9	.3	...
Cypress	.5	...	.5	...	...	...
Total	40.6	.7	15.4	23.6	.9	...
Hardwood:						
Red oaks	210.9	3.9	66.6	135.3	5.1	...
White oaks	244.8	1.7	68.9	168.7	5.4	.1
Hickories	100.9	2.0	23.2	74.5	1.2	...
Yellow-poplar	33.1	.6	15.1	16.7	.7	...
Sweetgum	29.2	2.1	7.5	19.4	.2	...
Black and tupelo gum	16.9	.1	7.6	7.9	1.3	...
Other hardwoods	59.1	3.0	19.6	36.2	.3	...
Total	694.9	13.4	208.5	458.7	14.2	.1
All species	735.5	14.1	223.9	482.3	15.1	.1

Table 8.--Total growing stock by species and stand size, by Survey region, 1948-49 (continued)

Species	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Denuded
	Million cubic feet					
	CENTRAL					
Softwood:						
Southern pines	0.1	...	...	0.1	...	...
Cedar	47.3	1.3	1.7	41.6	2.7	...
Total	47.4	1.3	1.7	41.7	2.7	...
Hardwood:						
Red oaks	184.1	33.4	55.8	89.9	5.0	...
White oaks	150.6	17.5	50.5	78.6	3.5	.5
Hickories	132.0	7.6	34.9	84.6	4.9	...
Yellow-poplar	69.7	18.9	17.8	31.2	1.8	...
Sweetgum	21.8	6.4	9.3	5.5	.6	...
Black and tupelo gum	17.6	3.1	5.0	9.0	.5	...
Other hardwoods	214.0	34.4	44.1	121.7	12.9	.9
Total	789.8	121.3	217.4	420.5	29.2	1.4
All species	837.2	122.6	219.1	462.2	31.9	1.4

Table 9.--Total growing stock by species and Survey region, 1948-49

Species	West	West-central	Central
	Million cubic feet		
Softwood:			
Shortleaf pine	21.4	31.6	0.1
Virginia pine	.1	1.5	...
Loblolly pine	1.2	...	...
Cedar	6.7	7.0	47.3
Cypress	48.9	.5	...
Total	78.3	40.6	47.4
Hardwood:			
Black, scarlet, and southern red oaks	101.4	152.5	125.9
Cherrybark, Shumard, and northern red oaks	39.5	51.0	48.6
Water oaks	29.0	7.4	9.6
White oak	49.8	157.0	85.0
Other white oaks	53.0	87.8	65.6
Hickories	65.7	100.9	132.0
Yellow-poplar	37.6	33.1	69.7
Sweetgum	101.9	29.2	21.8
Black and tupelo gums	34.1	16.9	17.6
Elms	42.7	10.5	39.4
Soft maples	17.1	5.3	8.3
Sugar maple	1.5	4.6	25.1
Ash	21.9	7.0	21.8
Beech	9.7	9.4	27.1
Willow	39.6	4.2	1.0
Walnut	2.6	7.3	26.6
Sycamore	15.3	4.9	6.5
Hackberry	13.8	1.2	9.8
Cottonwood	13.4	.1	.1
Other hardwoods	34.8	4.6	48.3
Total	724.4	694.9	789.8
All species	802.7	735.5	837.2

Table 10.--Average volume per acre of total growing stock by Survey region and forest type, 1948-49

Forest type	West	West-central	Central
		Cubic feet	
Softwood:			
Shortleaf pine	379	455	...
Cedar	(1/)	169	167
Total	375	322	167
Hardwood:			
Bottomland hardwood	539	545	584
Upland hardwood	406	343	425
Upland hardwood-pine	229	352	295
Total	453	351	429
All types	449	349	357

1/ Sample too small to be reliable.

Table 11.--Sawlog volume by species and tree diameter, by Survey region, 1948-49

Species	All diameter classes	10-12 inches 1/	14-18 inches	20-24 inches	26 inches and up
	Million board feet				
			WEST		
Softwood:					
Southern pines	57.0	31.7	17.8	7.5	...
Cedar	21.8	6.7	15.1	...	...
Cypress	247.7	42.4	103.2	46.3	55.8
Total	326.5	80.8	136.1	53.8	55.8
Hardwood:					
Red oaks	759.5	122.5	330.7	153.3	153.0
White oaks	404.8	91.9	164.8	85.7	62.4
Hickories	253.2	63.3	120.4	50.8	18.7
Yellow-poplar	156.5	32.5	95.6	21.9	6.5
Sweetgum	384.4	73.9	205.0	77.9	27.6
Black and tupelo gum	123.8	38.9	54.0	30.9	...
Other hardwoods	762.5	144.4	432.2	138.5	47.4
Total	2,844.7	567.4	1,402.7	559.0	315.6
All species	3,171.2	648.2	1,538.8	612.8	371.4
			WEST-CENTRAL		
Softwood:					
Southern pine	87.1	59.0	23.8	4.3	...
Cedar	8.9	7.9	1.0	...	...
Cypress	2.0	.4	1.6	...	...
Total	98.0	67.3	26.4	4.3	...
Hardwood:					
Red oaks	555.0	213.2	307.9	29.8	4.1
White oaks	549.4	244.9	278.8	20.9	4.8
Hickories	189.5	72.5	103.4	13.6	...
Yellow-poplar	126.7	28.8	78.3	19.6	...
Sweetgum	79.1	25.8	47.9	5.4	...
Black and tupelo gum	50.7	14.0	36.7	...	...
Other hardwoods	134.8	40.2	63.2	28.0	3.4
Total	1,685.2	639.4	916.2	117.3	12.3
All species	1,783.2	706.7	942.6	121.6	12.3

Table 11.--Sawlog volume by species and tree diameter, by Survey region, 1948-49 (continued)

Species	All diameter classes	10-12 inches 1/	14-18 inches	20-24 inches	26 inches and up
	Million board feet				
			CENTRAL		
Softwood:					
Cedar	61.1	40.5	20.6	...	...
Hardwood:					
Red oaks	779.5	156.9	372.7	208.1	41.8
White oaks	524.8	119.0	283.8	110.1	11.9
Hickories	313.6	84.2	160.9	62.2	6.3
Yellow-poplar	284.8	55.2	157.4	64.2	8.0
Sweetgum	63.8	17.4	43.7	2.7	...
Black and tupelo gums	43.0	11.2	26.8	5.0	...
Other hardwood	613.8	127.5	315.9	120.4	50.0
Total	2,623.3	571.4	1,361.2	572.7	118.0
All species	2,684.4	611.9	1,381.8	572.7	118.0

1/ Hardwood sawlog volume not tallied in trees under 11.0 inches d.b.h.

Table 12.--Sawlog volume by species and stand size, by Survey region, 1948-49

Species	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Denuded
	Million board feet					
WEST						
Softwood:						
Southern pines	57.0	18.2	24.7	13.9	0.2	...
Cedar	21.8	.6	13.5	7.4	.3	...
Cypress	247.7	145.6	89.1	13.0	...	...
Total	326.5	164.4	127.3	34.3	.5	...
Hardwood:						
Red oaks	759.5	206.3	368.0	174.6	9.0	1.6
White oaks	404.8	92.3	202.1	105.3	5.1	...
Hickories	253.2	46.4	123.8	78.3	4.7	...
Yellow-poplar	156.5	13.9	124.0	17.9	.7	...
Sweetgum	384.4	84.0	236.8	56.8	5.2	1.6
Black and tupelo gum	123.8	16.3	82.9	23.7	.9	...
Other hardwoods	762.5	163.4	402.3	185.1	11.7	...
Total	2,844.7	622.6	1,539.9	641.7	37.3	3.2
All species	3,171.2	787.0	1,667.2	676.0	37.8	3.2
WEST-CENTRAL						
Softwood:						
Southern pines	87.1	.6	52.1	31.5	2.9	...
Cedar	8.9	...	1.3	7.6	...	...
Cypress	2.0	...	2.0	...	...	...
Total	98.0	.6	55.4	39.1	2.9	...
Hardwood:						
Red oaks	555.0	19.3	264.5	254.7	16.5	...
White oaks	549.4	11.3	238.7	283.9	15.1	.4
Hickories	189.5	12.3	59.6	116.6	1.0	...
Yellow-poplar	126.7	1.8	76.3	45.7	2.9	...
Sweetgum	79.1	12.3	25.7	39.7	1.4	...
Black and tupelo gum	50.7	...	20.7	27.3	2.7	...
Other hardwoods	134.8	15.2	56.4	62.1	1.1	...
Total	1,685.2	72.2	741.9	830.0	40.7	.4
All species	1,783.2	72.8	797.3	869.1	43.6	.4

Table 12.--Sawlog volume by species and stand size, by Survey region, 1948-49 (continued)

Species	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Denuded
			Million board feet			
			CENTRAL			
Softwood:						
Cedar	61.1	1.1	7.6	50.3	2.1	...
Hardwood:						
Red oaks	779.5	204.0	261.0	288.2	26.3	...
White oaks	524.8	101.5	193.6	211.4	15.5	2.8
Hickories	313.6	30.4	115.9	153.6	13.7	...
Yellow-poplar	284.8	110.9	84.3	86.4	3.2	...
Sweetgum	63.8	18.9	28.5	16.0	.4	...
Black and tupelo gum	43.0	5.7	18.4	16.2	2.7	...
Other hardwoods	613.8	151.5	172.8	246.1	38.2	5.2
Total	2,623.3	622.9	874.5	1,017.9	100.0	8.0
All species	2,684.4	624.0	882.1	1,068.2	102.1	8.0

Table 13.--Sawlog volume by species and Survey region, 1948-49

Species	West	West-central	Central
	--- Million board feet ---		
Softwood:			
Shortleaf pine	56.3	83.4	...
Virginia pine	.7	3.7	...
Cedar	21.8	8.9	61.1
Cypress	247.7	2.0	...
Total	326.5	98.0	61.1
Hardwood:			
Black, scarlet, and southern red oaks	487.2	406.4	549.2
Cherrybark, Shumard, and northern red oak	138.2	134.2	204.8
Water oaks	134.1	14.4	25.5
White oak	187.2	400.1	290.8
Other white oaks	217.6	149.3	234.0
Hickories	253.2	189.5	313.6
Yellow-poplar	156.5	126.7	284.8
Sweetgum	384.4	79.1	63.8
Black and tupelo gum	123.8	50.7	43.0
Elms	144.6	16.0	123.4
Soft maples	56.5	13.6	21.1
Sugar maple	7.1	16.3	50.9
Ash	52.8	13.8	60.9
Beech	40.7	25.8	129.9
Willow	157.8	4.4	1.4
Walnut	12.5	10.8	74.8
Sycamore	76.3	20.9	32.7
Hackberry	42.2	2.7	21.3
Cottonwood	78.9	.5	...
Other hardwoods	93.1	10.0	97.4
Total	2,844.7	1,685.2	2,623.3
All species	3,171.2	1,783.2	2,684.4

Table 14.--Average sawlog volume per acre by Survey region and forest type, 1948-49

Forest type	West	West-central	Central
		Board feet	
Softwood:			
Shortleaf pine	740	932	...
Cedar	(1/)	269	358
Total	893	625	358
Hardwood:			
Bottomland hardwood	2,201	1,329	1,832
Upland hardwood	1,622	841	1,440
Upland hardwood-pine	731	879	847
Total	1,817	862	1,444
All types	1,774	846	1,145

1/ Sample too small to be reliable.

Table 15.--Sawlog volume by softwood tree grade, hardwood log grade, and stand quality, by Survey region, 1948-49

Species group	All grades	Grade 1	Grade 2	Grade 3	
				In fair and better stands	In poor stands
	Million board feet				
			WEST		
Softwood	326.5	73.5	97.0	31.5	124.5
Hardwood	2,844.7	352.7	421.0	650.3	1,420.7
Total	3,171.2	426.2	518.0	681.8	1,545.2
			WEST-CENTRAL		
Softwood	98.0	25.2	21.5	10.4	40.9
Hardwood	1,685.2	42.1	239.3	164.2	1,239.6
Total	1,783.2	67.3	260.8	174.6	1,280.5
			CENTRAL		
Softwood	61.1	1/ 61.1	...	...	...
Hardwood	2,623.3	249.2	490.6	395.5	1,488.0
Total	2,684.4	310.3	490.6	395.5	1,488.0

1/ Cedar is the only species represented here. All cedar sawlog trees were graded as No. 1.

Definition of Terms

Forest Land

Forest land. Land which bears forest growth, or land from which the forest has been removed and which has not been put to other use. Each tract classed as forest is at least one acre in size.

Commercial forest land. Forest land bearing, or capable of bearing, timber of commercial quantity and quality, and not withdrawn from commercial timber use.

Reserved-commercial forest land. Forest land in public parks or preserves which qualifies as commercial forest land except that it is withdrawn from commercial timber use through statute, ordinance, or administrative order.

Tree Species

Softwoods. Pine, eastern redcedar, and cypress.

Hardwoods. Any broadleaved species.

Forest Type

Forest type is determined only from dominant and codominant growing stock and dominant and codominant smaller sound trees of good form.

Shortleaf pine. Stands in which pines comprise at least 25 percent of the trees.

Cedar. Stands in which eastern redcedar comprises at least 25 percent of the trees.

Bottomland hardwood. Stands in which bottomland hardwoods and cypress comprise 76 percent or more of the trees.

Upland hardwood. Stands in which upland hardwoods comprise 76 percent or more of the trees, and no pine is present.

Upland hardwood-pine. Stands in which upland hardwoods comprise 76 percent or more of the trees, and some pine is present.

Class of Timber

Growing stock. Sawlog growing stock is the sawlog portion of sawlog trees. Total growing stock includes sawlog growing stock, and upper stems of softwood sawlog trees and entire stems of cordwood trees to a minimum diameter of 4 inches inside bark.

Sawlog tree. A live, merchantable softwood 9.0 inches or larger in d.b.h., or a live, merchantable hardwood 11.0 inches or larger in d.b.h. To be merchantable, the tree must have at least a merchantable 12-foot butt log or 50 percent of its gross volume in merchantable logs.

Cordwood tree. A live tree 5.0 inches or larger in d.b.h., but smaller than sawlog size, which would become a sawlog tree if it should grow to sawlog size.

Cull tree. A live tree 5.0 inches or larger in d.b.h., which because of decay or sound defect fails to meet the specifications for a cordwood or sawlog tree.

Tops and limbs. Upper stems and limbs of hardwood sawlog trees between the top sawlog and a minimum diameter of 4 inches inside bark.

Stand-size Class

Large saw timber. Stands having a net volume of at least 1,500 board feet per acre in sawlog trees and at least half of this volume in softwoods 15.0 inches d.b.h. and larger, and hardwoods 17.0 inches d.b.h. and larger.

Small saw timber. Stands which do not meet the specifications for large saw timber but which do contain a net volume of at least 1,500 board feet per acre in sawlog trees.

Cordwood. Stands below saw-timber specifications, with at least 10 percent of the growing space occupied by growing stock, and with at least 5 percent of the growing space occupied by cordwood trees.

Seedling and sapling. Stands that do not meet saw-timber and cordwood specifications in which at least 10 percent of the growing space is occupied by growing stock and smaller sound trees of commercial species, and with at least 5 percent of the space occupied by seedlings and saplings.

Denuded. Commercial forest land which does not qualify for any other stand-size class.

Tree Stocking

Degree of stocking is determined by the ratio of the actual number of growing-stock and smaller sound trees of good form in the stand to the number of trees of the same size required to occupy the site fully (for best growth). Under this criterion, stands are well stocked when the percentage of full stocking is 70 or above, medium stocked when the percentage is 40 to 69, poorly stocked when the percentage is 10 to 39, and nonstocked when the percentage is under 10.

Volume and Basal Area

Sawlog volume. Net volume in merchantable sawlogs in sawlog trees, measured by the International 1/4-inch log rule.

Total volume. Volume of sound, usable wood in stems of softwoods and stems and branches of hardwoods between stump and minimum top diameter of 4 inches inside bark, measured in cubic feet.

Basal area. Cross-sectional area of trees at breast height, measured in square feet.

Diameter

D.b.h. (diameter breast high). Tree diameter in inches, outside bark, measured at 4½ feet above ground.

Diameter class. Each 2-inch diameter class includes diameters 1.0 inch below and 0.9 inch above the stated midpoint. E.g., the 12-inch class includes trees 11.0 up to and including 12.9 inches.

Log and Tree Grade

Tree grades for softwoods:

Grade 1 (smooth[1/] trees). Not less than 20 feet of clear bole and at least 40 percent of the merchantable length clear of limbs and knots in sections not less than 8 feet in length. All cedar sawlog trees were graded as No. 1.

Grade 2 (limby trees). Not less than 12 feet of clear bole and 25 to 39 percent of the merchantable length clear of limbs and knots in sections not less than 8 feet in length.

Grade 3 (rough trees). Merchantable trees below grade-2 specifications.

1/ Except as noted in the case of cedar.

Log grades for hardwoods:[1/]

Grade 1. Smooth, generally clear logs which yield at least one-half of their volume in higher grades of lumber.

Grade 2. Logs of average clearness which yield from one-third to one-half of their volume in higher grades of lumber.

Grade 3. Small logs or logs of less than average clearness which yield less than one-third of their volume in higher grades of lumber, or sound, straight logs with many small defects which make them suitable only for ties and timbers.

Stand Quality

Fair and better. A stand in which grade 2 or better hardwood logs or softwood trees are present.

Poor. A stand in which no grade 2 hardwood logs or softwood trees are present.

1/ For detailed external specifications of log grades used, see "Interim Sawlog Grades for Southern Hardwoods," Southern Forest Experiment Station, 9 pp., January 1948. (Revised).